CLAIMS

- 1. A dual-gate field effect transistor comprising a substrate, a source, a drain, a vertical channel provided between the source and the drain as rising from the substrate, a pair of gate insulation films sandwiching the channel from a direction orthogonal to a carrier-running direction in the channel and a pair of gate electrodes facing the channel, respectively, via the pair of gate insulation films, wherein the pair of insulation films have different thicknesses.
- 2. A dual-gate field effect transistor according to claim 1, wherein the pair of gate electrodes are electrically connected to each other.
- 3. A dual-gate field effect transistor according to claim 1, wherein the pair of gate electrodes are electrically independent of each other.
- 4. A dual-gate field effect transistor according to claim 1, wherein the pair of gate insulation films have different permittivities.
- 5. A dual-gate field effect transistor according to claim 1, wherein the pair of gate electrodes have different work functions.
- A dual-gate field effect transistor according to claim 1, wherein the vertical channel has a triangle shape in cross section in the direction orthogonal to the carrier-running direction and wherein the pair of gate insulation films are in contact with slant faces that are opposed sides of the triangle, respectively.

- 7. A dual-gate field effect transistor comprising a substrate, a source, a drain, a vertical channel provided between the source and the drain as rising from the substrate, a pair of gate insulation films sandwiching the channel from a direction orthogonal to a carrier-running direction in the channel and a pair of gate electrodes facing the channel, respectively, via the pair of gate insulation films, wherein the pair of insulation films have different permittivities.
- 8. A dual-gate field effect transistor according to claim 7, wherein the pair of gate electrodes are electrically connected to each other.
- 9. A dual-gate field effect transistor according to claim 7, wherein the pair of gate electrodes are electrically independent of each other.
- 10. A dual-gate field effect transistor according to claim 7, wherein the pair of gate electrodes have different work functions.
- 11. A dual-gate field effect transistor according to claim 7, wherein the vertical channel has a triangle shape in cross section in the direction orthogonal to the carrier-running direction and wherein the pair of gate insulation films are in contact with slant faces that are opposed sides of the triangle, respectively.
- 12. A dual-gate field effect transistor comprising a substrate, a source, a drain, a vertical channel provided between the source and the drain as rising from the substrate, a pair of gate insulation films sandwiching the channel from a direction orthogonal to a carrier running direction in the channel and a pair of gate electrodes facing the channel, respectively, via the pair of gate insulation films, wherein the pair of gate electrodes have different work functions.

- 13. A dual-gate field effect transistor according to claim 12, wherein the pair of gate electrodes are electrically connected to each other.
- 14. A dual-gate field effect transistor according to claim 12, wherein the pair of gate electrodes are electrically independent of each other.
- 15. A dual-gate field effect transistor according to claim 12, wherein the vertical channel has a triangle shape in cross section in the direction orthogonal to the carrier-running direction and wherein the pair of gate insulation films are in contact with slant faces that are opposed sides of the triangle, respectively.